Fern collecting in Cuba

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A year ago in March we were camping in the Trinidad Mountains of the Province of Santa Clara, Cuba, collecting for the New York Botanical Garden. We secured a pack train of mules and horses, assistants and provisions at or near Cienfuegos, turned our backs on hotels and "all the comforts of home," and for two weeks lived in the wilderness, among the natives, though not with them. We met nothing but kindness and courtesy; for they shared their provisions with us even to the pedigreed fighting-cock eggs, which are worth their weight in silver if not in gold. They acted as guides and refused pay for their services, treated us as honored guests; we were not disturbed in our camps and lost absolutely nothing except time, which is not a commercial commodity.

The water supply of Cienfuegos comes from the Hanabanilla River, and we made our way first to the Falls, about twenty miles east from the city. This is a most picturesque spot, for on the dripping ledges under the falls were pendent masses of the pale green fronds of *Adiantum capillus-veneris* glistening with the spray and swaying about like emerald plumes. Mixed with it were the slender, graceful fronds of *Anemia Underwoodiana* Maxon. This spot is rich in species of maidenhair ferns, for besides the common and exasperating *Adiantum fragile* we found *A. tenerum*, *A. villosum*, *A. pulverulentum*, *A. melanoleucum*, and *A. cristatum*. On the banks in rich woods, *A. trapeziforme* grew most abundantly with glossy black stipes. *A. macrophyllum* and *A. petiolatum* also were here, and on the rocky ledges the rarer *A. cubense* was found.

The slopes of the Trinidad Mountains are full of deep valleys, known as arroyos, with streams flowing down

them into the larger rivers. To get into these and spend a day hunting for ferns and mosses is a joy and delight. Usually it necessitates a long horseback ride and some wading and scrambling after dismounting, with the occasional recompense of a bath in some cool, fascinating pool. The spleenworts are more or less common in these damp ravines; *Asplenium dentatum* occurs on the rocky ledges as it does at Miami, Florida, and the more delicate and slender *A. monteverdense* Hook. resembles *A. myriophyllum* as it grows in Florida. *A. cuneatum* is also fairly abundant in wet ravines and *A. formosum* occurs in the rocky beds of streams. A few small and attractive species of *Pteris* grew also on the cliffs with the spleenworts, *Pteris mutilata* on mossy rocks, on shady cliffs, or at the mouth of caves. *Doryopteris palmata* is also abundant near the falls. The very common silver fern, *Ceropteris* (*Gymnogramme*) *calomelanos* is here also, tall and luxuriant. But the greatest find of the day is always the tree ferns, for on their trunks not only do various species of filmy ferns grow, but also rare mosses and hepatics or interesting fern prothallia.

Perhaps the most surprising experience is to find an *Anemia*, *A. Underwoodiana*, growing in crevices of rocks in the bed of the stream when the most common species of Cuba, Florida, and the Bahamas, *A. adiantifolia*, is found usually on dry rocks and cliffs. Many of the broad, entire-leaved ferns are also the favorite homes of small hepatics with a peculiar odor, also of mosses and tiny round-spotted lichens. *Asplenium serratum* L., the "bird's nest fern," grows to be three feet high and six inches wide and is most showy with the long parallel rows of dark brown sori on the back. In contrast to this species, but very different in its large brown dots, is *Pessopteris* (*Polypodium*) *crassifolia*, which is found on dead and decaying trees in woods. *Campyloneurum phyllitidis*, our old and familiar friend of Florida and the

Bahamas, occurs here too on trees, and *C. costatum* is not uncommon. *C. angustifolium* hangs down from the trees in dense clusters like a *Vittaria*, which genus it resembles when curled up and dried. Among the bushes on the banks or drooping over the water, the taller species of *Dryopteris*, such as *D. oligophylla* Maxon and *D. patens* are sure to be found, and *D. parasitica* (*Aspidium molle*) also is rather common. Various species of *Tectaria* may be looked for here also; *T. heracleifolia* attains a large size at the Falls of the Hanabanilla, and all forms and sizes may be found in the various arroyos, from the young plants with small simple leaves, two to three inches long, to leaves two to three feet high, and variously lobed or with ragged incisions. *T. martinicensis* occurs along the banks of rivers and in beds of rocky streams near Guanabana and Siguanea. *T. coriandrifolia* (Sw.) Und. is rarer, and occurs in crevices and sides of wet rocks in dense woods.

Two species of *Blechnum* are more or less common. *B. serrulatum* growing among grasses, with *Pteridium caudatum* on the sunny summit of a hill 900 meters high, was rather surprising, especially as we usually find it in damp, shady places under palms on the borders of lagoons and streams. *B. occidentale* is perhaps quite as common in ravines and along streams in various parts of the island. *Olfersia cervina* Kze. with its very unlike fertile and sterile fronds, has leaves occasionally 1.5 meters long and grows in ravines and on wooded hillsides. The climbing species of polypody of the genus *Phymatodes*, especially *P. lycopodioides*, occurs on trees and bushes, as they do so commonly in Jamaica, and *Polypodium polypodioides* grows on limestone cliffs as well as on trees as it does in other parts of Cuba and the United States.

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